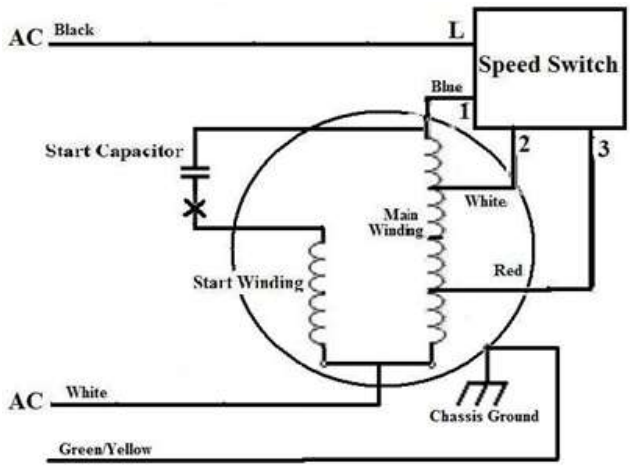
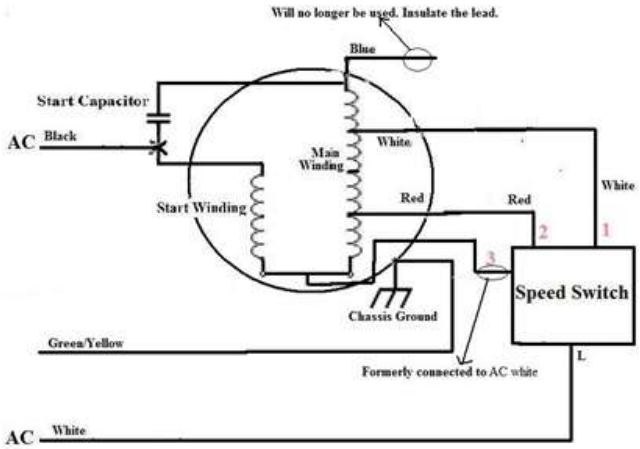
How to Reverse the Rotation of Single Phase Capacitor-Start Electric Motors

Reversing the rotation of electric motors can be done easily with 3-phase motors. This can be easily achieved by swapping the connection of any two motor leads. But 3-phase motors are usually found and used for industrial purposes. The ones found and used in our homes, from water pumps to electric fans, are single phase capacitor-start type motors. Unlike 3-phase motors, reversing the rotation of single phase electric motors is no easy task. Swapping any two motor leads will not result in the reversal of the motor rotation. Analysis of the motor windings and connections are necessary before any modification can be done to achieve the desired result. Let's take a 3-speed single phase capacitor-start electric motor with electrical diagram shown below as an example. Make sure the motor is disconnected from the power supply before attempting to follow this tip. This tip is intended only for individuals with electrical knowledge, necessary tools, and understand the risks associated with handling electrical equipments and devices.

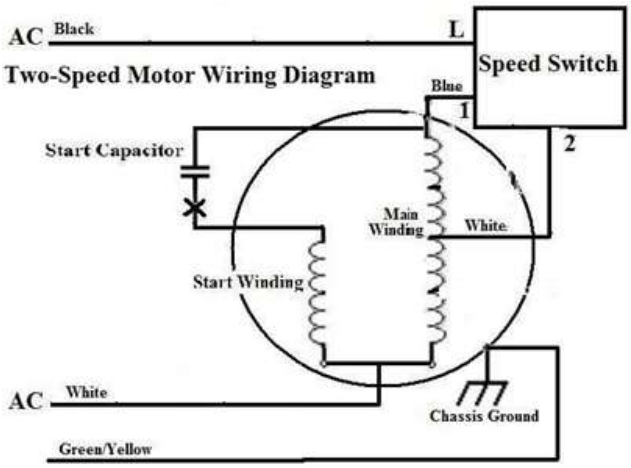


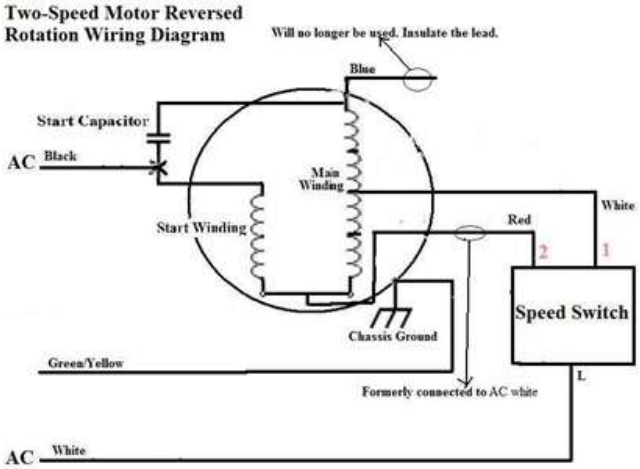
The first step in the process is determining the start winding which is connected to the line (AC white) and to one side of the start capacitor. To accurately determine the start winding, disconnect all motor leads from the start capacitor and the speed switch for multi-speed motors and then setting your ohmmeter to the lowest scale (R x 1), measure the resistances between the AC white line and each of the motor leads connecting to the start capacitor. The one with the least resistance is the starting winding lead.

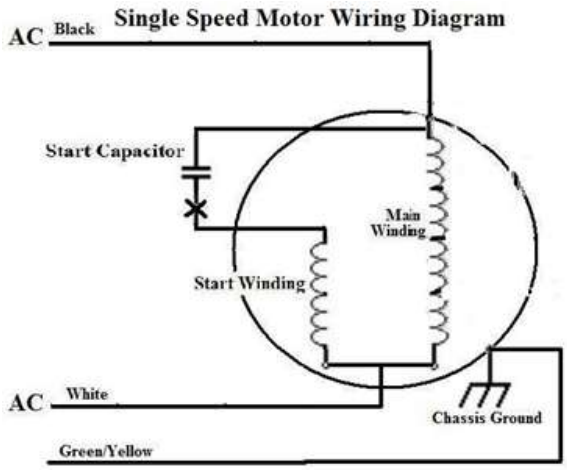
Once the start winding lead going to the capacitor is determined, reconnect the capacitor then connect the black AC line to the found start winding lead (marked X). Connect the white AC line to L of speed switch, the motor lead formerly connected to AC white to 3, red to 2, and white to 1 as shown below. Leave the green/yellow ground wire connection as is.

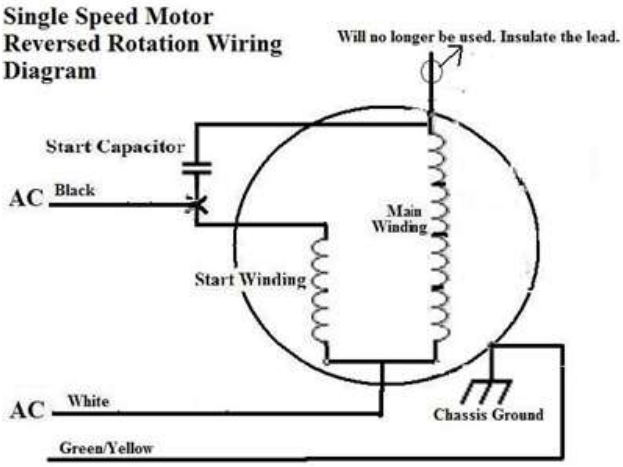


Below are the wiring modifications for 2-speed and single speed single phase capacitor-start electric motors.









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